User Manual

ASTPWin

Data acquisition and treatments for CIMEL instruments

Version 1.1

Author : Jean-Baptiste DEFOSSEZ

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CIMEL Electronique

5-7 Cité de Phalsbourg

75011 PARIS

FRANCE

Tel : (+33) 1 43 48 79 33

Fax : (+33) 1 43 48 62 61

Email : cimel@cimel.fr

Internet : www.cimel.fr

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General

Minimal required configuration

Operating system

- Windows 95 or higher
- Windows NT 4 Service Pack 3 or higher

Processor

All ; A more powerful processor will speed up loading and merging operations of large files.

Memory

16 Mb ; Performances are better with more memory.

Graphical resolution

640*480 16 colors.

Communication port

1 free COM port.

Version problem with Comctl32.dll file

This problem concern the first version of Windows 95, it doesn't occur on Windows version superior or equal to OSR B version of Windows 95 (Windows 98 and Windows NT aren't affected).

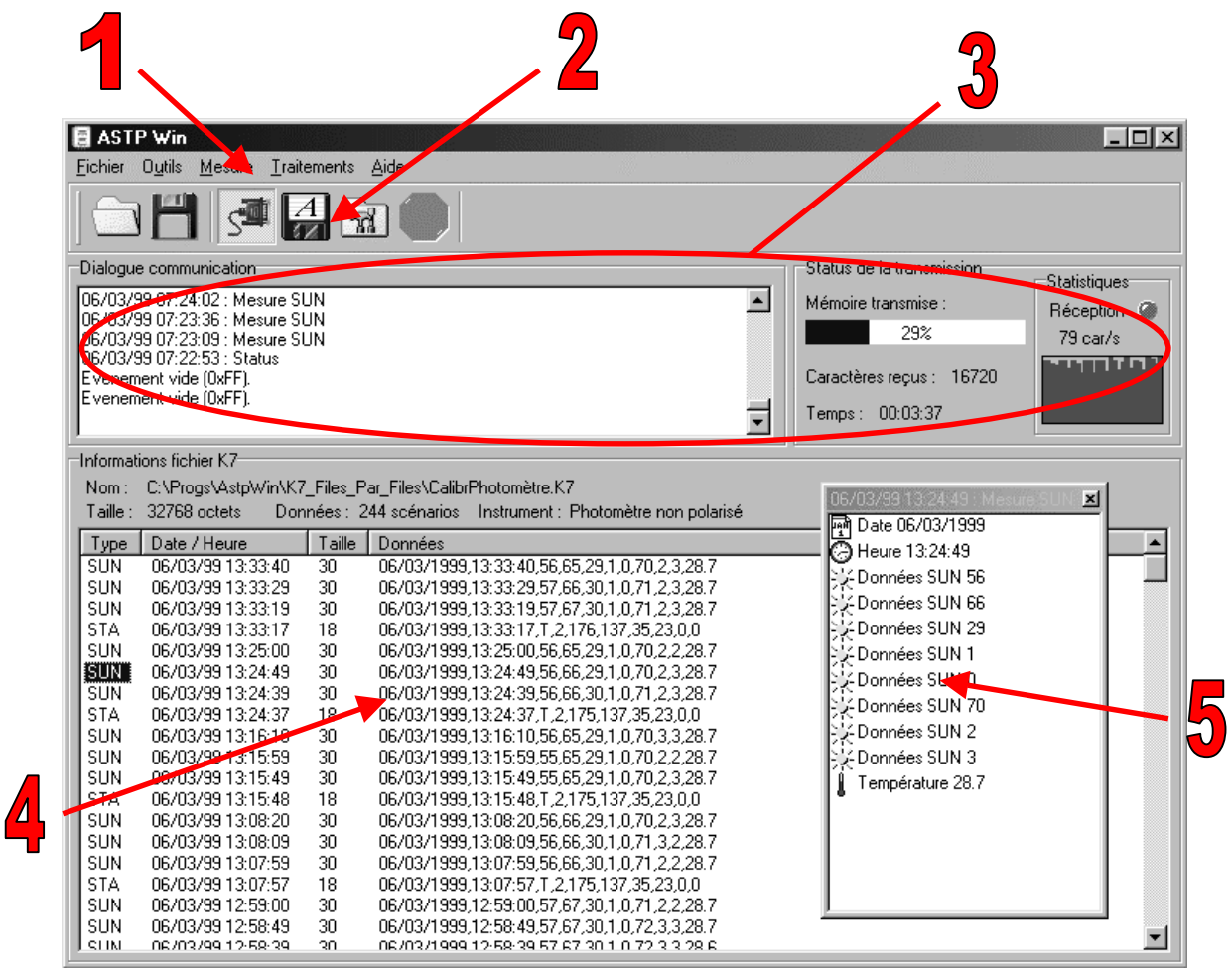
To launch ASTPWin, you must have on your system the 4.70 version for the Windows DLL `COMCTL32.DLL`. Actually with the first version of Windows 95, released in October 95, there's a bug which can hang up the computer.
To install the correct version of this file, you must download the `Comctl32.exe` file , available for free on the Microsoft web site and decompress it.
Then, restart the computer in DOS mode and replace the file with the same name (`COMCTL32.DLL`) which is on the system directory of Windows (`C:\WINDOWS\SYSTEM` in most cases).

Note that ASTPWin won't run if the version of this file isn't correct.

Presentation

ASTPWin allows data acquisition on CIMEL Electronique instruments.

The main ASTPWin window is composed of several parts :



It's possible to access all the ASTPWin functions with the main menu **(1)**.

The part **(2)** contains the icon shortcuts. Each icon accelerate the access to one particular function. To know the signification of each image, let the mouse cursor a few seconds over it.

The part **(3)** allows to see the acquisition progression. This part is only visible if the communication port has been opened.

The list of events (or scenarios) currently edited is indexed in the list view **(4)**. The selected scenario detail is in text chart **(5)**. This chart is only visible if the measurement details visualization is activated.

Data acquisition

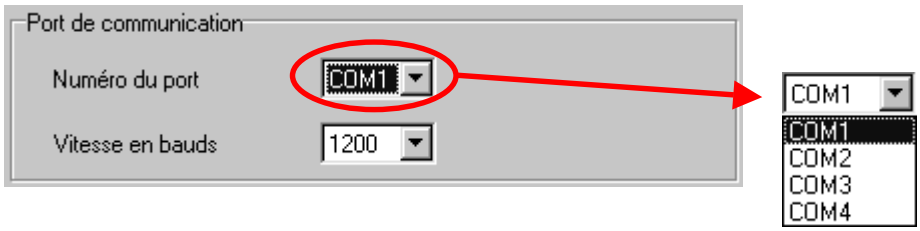
Hardware configuration

ASTPWin need to know the link type between the PC and the instrument, the communication port (from COM1 to COM4) and the transmission speed (1200 or 9600 bauds). To specify you configuration, select the menu « `Tools->General Setup` » in the principal menu and click on the « `Communication` » sheet.

Link kind choice

For a local link with a serial port, choose Serial link, for a MODEM link, choose MODEM. By selecting MODEM, you will have to setup the MODEM initialization string, and the number of ring before the MODEM pick up to answer the call.

Communication port choice



You must indicate the communication port number used for the acquisition (from COM1 to COM4).

Transmission speed

The speed (in bauds) is the speed used for the transmission. That option is generally 1200 Bauds. At this time, only few instruments can handle 9600 Bauds speed rate. Standard instruments are running at 1200 bauds.

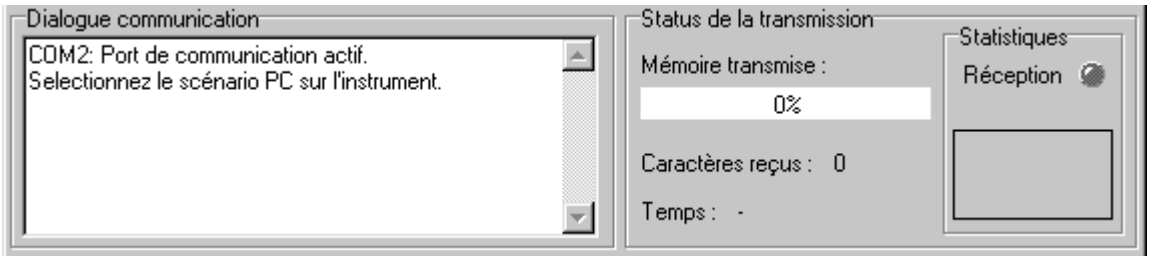
Acquisition launch

Connecting to the communication port

To activate the link with the serial port, select the item « `Tools->Connect / Disconnect` » in the main menu or click on the following shortcut icon :

Link connection ON / OFF

The acquisition progression visualization should appear :



The software is now waiting for an instrument transmission.

If the dialog don't appear, the communication port can't be opened :

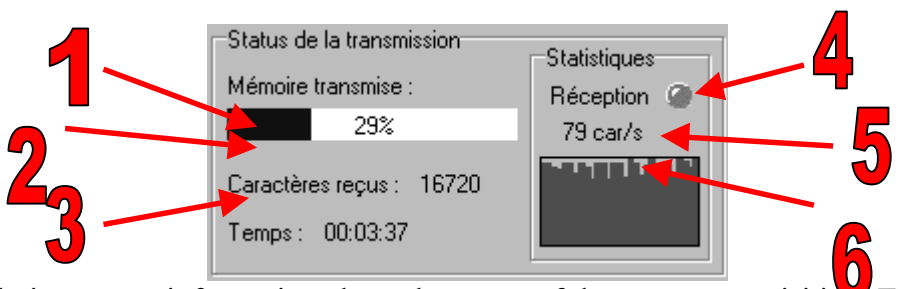
- Verify the communication port number.
- Verify if the communication port isn't already used by Windows or by another application.
- Some portable computer doesn't have COM1 communication port. Choose another communication port.

Acquisition launch

The acquisition start when the instrument begin to send data :

- Connect the instrument to the chosen communication port
- Select the PC scenario on the instrument (see the instrument documentation for much details, by default : MAN / SEL / PC / GO).

The data transmission LED **(4)** becomes green as soon as data from the instrument come :



This panel gives some information about the status of the current acquisition. The transmitted memory **(1)** is the percentage of memory uploaded in the PC. The number of characters

received **(2)**, the amount of time from the transmission starts **(3)** and the average acquisition speed in characters per second **(5)** are given for information. The graphic **(6)** shows the last 30 seconds of transmission, it allows to report the stability and the cuttings during the data transmission.

Acquisition end

The acquisition stops automatically, but can be terminated by a user intervention :

Stop transmission

The data transfer end if one of these conditions is done :

- The instrument memory is fully transmitted (Detection : the last received scenario was already received at the start of the transmission)
- Two consecutive empty events were received and the related stop option was activated.
- The connection between the PC and the instrument was broken (no data received during several seconds)
- The connection between the PC and the instrument is too bad (less than two characters per seconds transmitted during the 30 last seconds)
- The transfer was interrupted by the user

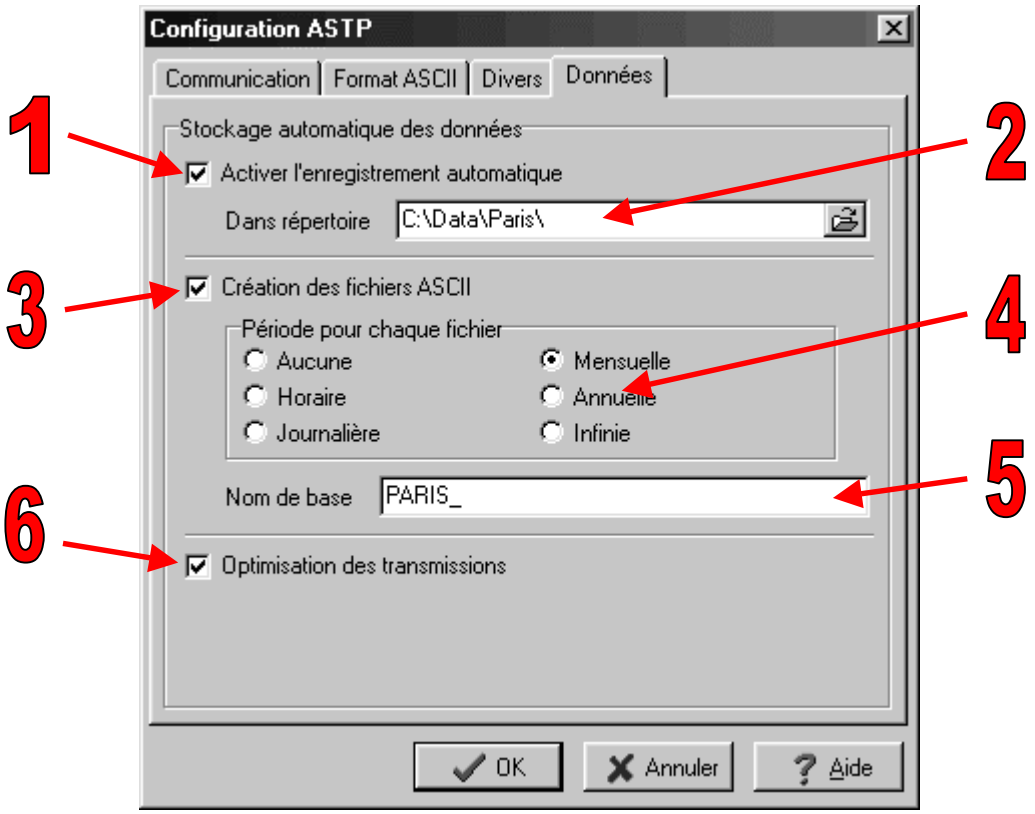
Then, the scenarios list is refreshed.

Advanced options

Automatic data storage

It's possible to create automatically after every transfer
- The .K7 file of the acquisition
- ASCII files organized by period

To parameter the automatic data storage, choose in the menu « `Tools->General setup` » the tab « `Data` ».



By activating the automatic recording **(1)**, K7 files will be saved automatically in the K7 directory **(2)**.
The K7 file name is automatically created with the PC date at the time of the end of the transmission. The file name is MMDDhhmm.K7 (MM = Acquisition month, DD = Acquisition day, hh = Acquisition hour and mm = Acquisition minute). To activate this option permit to configure the ASCII files creation.

The option « `Create ASCII files` » validate the text files creation **(3)**.

The data in text files can be organized in several ways **(4)**:
- No period (None)
  The files are created with the same K7 file name (MMDDhhmm.EXT).
- Hourly period

The data are gathered hour by hour. The files are named hhDDMMYYYY.EXT.

- Daily period
  The data are gathered day by day. The files are named DDMMYYYY.EXT.
- Monthly period
  The data are gathered month by month. The files are named MMYYYY.EXT.
- Yearly period
  The data are gathered year by year. The files are named YYYY.EXT.
- Infinite period
  The data are gathered in the same file. The file name is equal to the base name.

Attention: Larger is the period, longer takes the treatment time for adding data.

The base name **(5)** is the optional prefix that is added before the text file name. For example if the base name is "PARIS_" and the period is monthly, the file name for June 98 will be PARIS_0698.EXT (EXT us the ASCII file extension).

The option « `Optimize transmissions` » **(6)** allows to stops the transmission when the software detects a scenario already transmitted in previous communications.

Automatic connection at the start

It's possible to connect (to open) automatically to the communication port at every launch of ASTPWin. That option is convenient when occurs a power failure and you want launch automatically ASTPWin is reception mode at the computer start.
To activate that option, choose the menu « `Tools->General setup` » tab « `communication` » and check « `Automatic connection at the start` ».

Stop the transmission after two empty events

Activate this option in order to optimize the transmission. The PC stops the acquisition when it detects two consecutive empty events (0xFF type). In fact, when two empty events are produced, the rest of the instrument memory should not contain data anymore.
To activate that option, choose the menu « `Tools->General setup` », « `communication` » tab and check « `Stop the connection after two empty events` ».

Transmission statistics

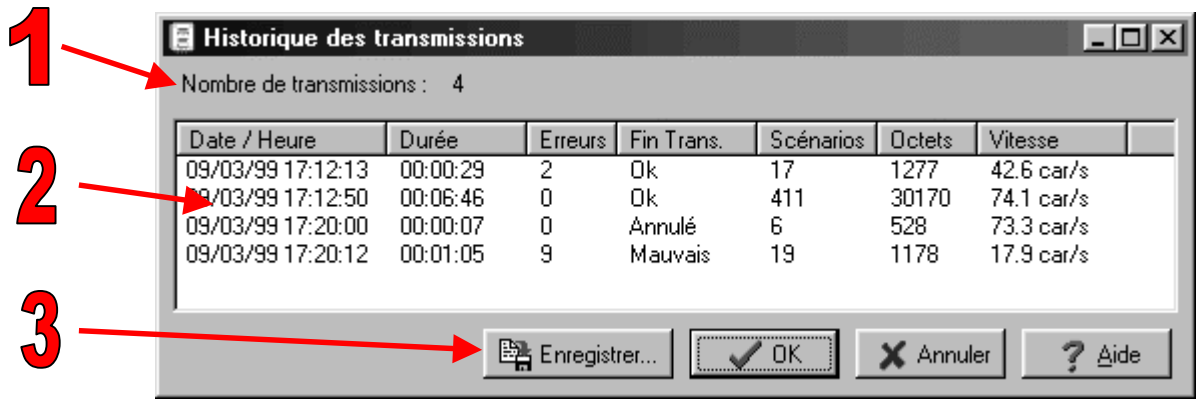
ASTPWin can display statistics about the transmission done during the current session. These statistics are useful for example, if the user isn't physically present during automated transmission.

Writing transmissions report

That option create a little log file about the communications. Each transmission add one line to this file. The file name is « `Transmission.Log` », it's stored in the root directory of ASTPWin. This file is never deleted, the data are always appended to it. That's why the user should erase periodically this file if that option is activated.
To activate that option, choose the menu « `Tools->General setup` » , « `Misc.` » tab and check « `Write transmissions report` ».

Transmissions history visualization

To see the history, choose the menu « `Tools->Transmission history` ».
That screen shows the list of transmissions done during the current session.



The number of transmission **(1)** is the amount of communication done from the start of ASTPWin.

Columns description **(2)** :

- Date / Time
  Date and time when the transmission started.
- Duration
  Duration of each transmission.
- Errors
  Number of errors during each transmission. It's an indication of the transmission quality.
- End Trans.
  Show how the transmission ended :

OK : It normally ends.

Canceled : The transmission was canceled by the user.

Timeout : There was no data during about 10 seconds. The software has ended the connection.

Bad trans : The connection was so bad that the program terminate the transmission.

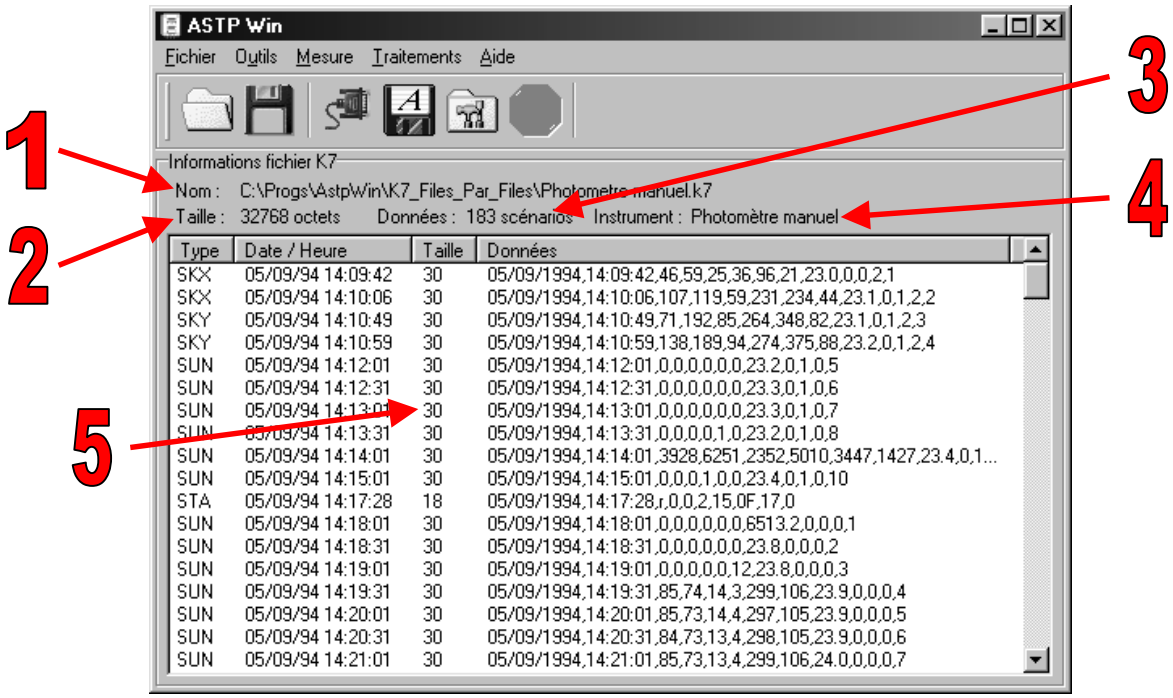
- Scenarios
  Amount of scenarios (events) transmitted.
- Bytes
  Amount of bytes transmitted during the communication.
- Speed
  Compute a transmission speed (in characters / sec.).

The « `Save` » button **(3)** saves the list in a simple ASCII file.

Data visualization

Scenarios list

The scenarios list shows the content of the currently edited K7 file :



Type	Date / Heure	Taille	Données
SKX	05/09/94 14:09:42	30	05/09/1994,14:09:42,46,59,25,36,96,21,23.0,0,0,2,1
SKX	05/09/94 14:10:06	30	05/09/1994,14:10:06,107,119,59,231,234,44,23.1,0,1,2,2
SKY	05/09/94 14:10:49	30	05/09/1994,14:10:49,71,192,85,264,348,82,23.1,0,1,2,3
SKY	05/09/94 14:10:59	30	05/09/1994,14:10:59,138,189,94,274,375,88,23.2,0,1,2,4
SUN	05/09/94 14:12:01	30	05/09/1994,14:12:01,0,0,0,0,0,0,23.2,0,1,0,5
SUN	05/09/94 14:12:31	30	05/09/1994,14:12:31,0,0,0,0,0,0,23.3,0,1,0,6
SUN	05/09/94 14:13:01	30	05/09/1994,14:13:01,0,0,0,0,0,0,23.3,0,1,0,7
SUN	05/09/94 14:13:31	30	05/09/1994,14:13:31,0,0,0,0,0,1,0,23.2,0,1,0,8
SUN	05/09/94 14:14:01	30	05/09/1994,14:14:01,3928,6251,2352,5010,3447,1427,23.4,0,1...
SUN	05/09/94 14:15:01	30	05/09/1994,14:15:01,0,0,0,1,0,0,23.4,0,1,0,10
STA	05/09/94 14:17:28	18	05/09/1994,14:17:28,r,0,0,2,15,0F,17,0
SUN	05/09/94 14:18:01	30	05/09/1994,14:18:01,0,0,0,0,0,0,6513.2,0,0,0,1
SUN	05/09/94 14:18:31	30	05/09/1994,14:18:31,0,0,0,0,0,0,23.8,0,0,0,2
SUN	05/09/94 14:19:01	30	05/09/1994,14:19:01,0,0,0,0,0,12,23.8,0,0,0,3
SUN	05/09/94 14:19:31	30	05/09/1994,14:19:31,85,74,14,3,299,106,23.9,0,0,0,4
SUN	05/09/94 14:20:01	30	05/09/1994,14:20:01,85,73,14,4,297,105,23.9,0,0,0,5
SUN	05/09/94 14:20:31	30	05/09/1994,14:20:31,84,73,13,4,298,105,23.9,0,0,0,6
SUN	05/09/94 14:21:01	30	05/09/1994,14:21:01,85,73,13,4,299,106,24.0,0,0,0,7

It's an information panel including some general information : The complete file name **(1)**, it's size **(2)** and the number of scenarios **(3)** contained and the CIMEL instrument name **(4)**. After that comes the scenarios detail. That list **(5)** is composed of several columns :

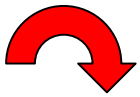
- Type — Scenario type (short name or extension)
- Date / Time — Time when the scenario starts
- Size — Size of the event in bytes
- Data — Show the digital counts

Note that when a transmission occurs, you're not allowed to use that list.

Events sorting

You can sort that list by your criterion by clicking on the title of the column.

A first click sort the scenarios in increasing order:



Type	Date / Heure	Taille	Données
ALM	16/09/98 08:54:15	146	16/09/1998,08:54:15,S
ALM	16/09/98 08:53:07	146	16/09/1998,08:53:07,S
ALM	16/09/98 08:52:02	146	16/09/1998,08:52:02,2
ALM	16/09/98 08:50:55	146	16/09/1998,08:50:55,T
ALM	16/09/98 08:14:11	146	16/09/1998,08:14:11,S
ALM	16/09/98 08:13:06	146	16/09/1998,08:13:06,S
ALM	16/09/98 08:11:59	146	16/09/1998,08:11:59,2
ALM	16/09/98 08:10:54	146	16/09/1998,08:10:54,T

A second click sort the scenarios in decreasing order :

Type	Date / Heure	Taille	Données
STA	16/09/98 08:50:18	18	16/09/1998,08:50:18,S
STA	16/09/98 08:10:17	18	16/09/1998,08:10:17,S
STA	16/09/98 07:20:18	18	16/09/1998,07:20:18,S
STA	16/09/98 06:29:17	18	16/09/1998,06:29:17,S
STA	15/09/98 16:10:17	18	15/09/1998,16:10:17,S
STA	15/09/98 15:30:17	18	15/09/1998,15:30:17,S
PP1	16/09/98 08:58:33	92	16/09/1998,08:58:33,S
PP1	16/09/98 08:57:56	92	16/09/1998,08:57:56,T

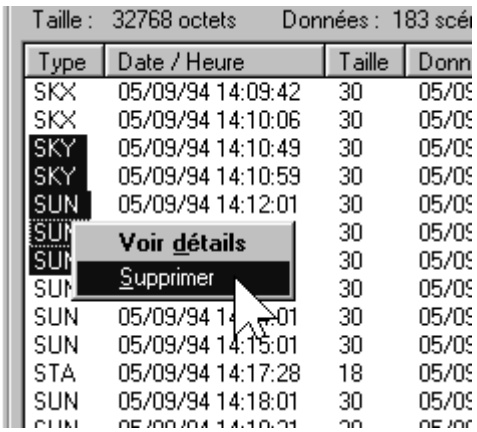
Scenario type

The scenario type condition the ASCII file name extension. Direct sun data (SUN type) will create file with a `.SUN` extension.

If the scenario isn't recognized by the software, the type is ? ? ?. Please contact CIMEL Electronique to add the new scenario in the program.

Scenarios suppression

It's possible to suppress bad or uninteresting scenarios.



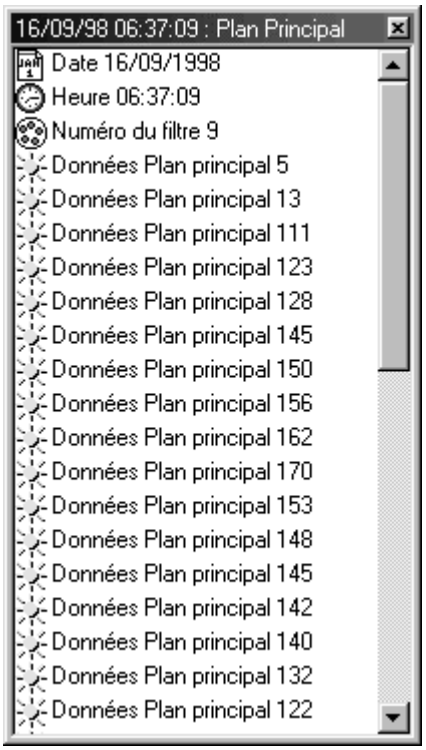
Select scenarios to remove , click on the right mouse button and select « `Remove` ». It's also possible to suppress the events with the main menu « `Measurement->Delete measurements` ».

The selected scenarios are definitely removed from the K7 file.

Measurement details

To know the details of one event, choose in the main menu « `Measurement -> Measurement details` ».

A new window appears and shows the details of one measurement. Each symbol correspond to a data type family :



	Date
	Time
	Filter number
	Temperature
	System data
	Battery
	Angle
	Physical data (DC)

Advanced options

Display empty scenarios (.INI)

It's possible to hide or to show the empty scenario (0xFF Type) in the scenario list. By default, this scenario type is hidden because it don't bring interesting information.
To activate that option, select the menu « `Tools->General setup` », « `misc.` » tab and check « `Display empty scenarios (.INI)` »

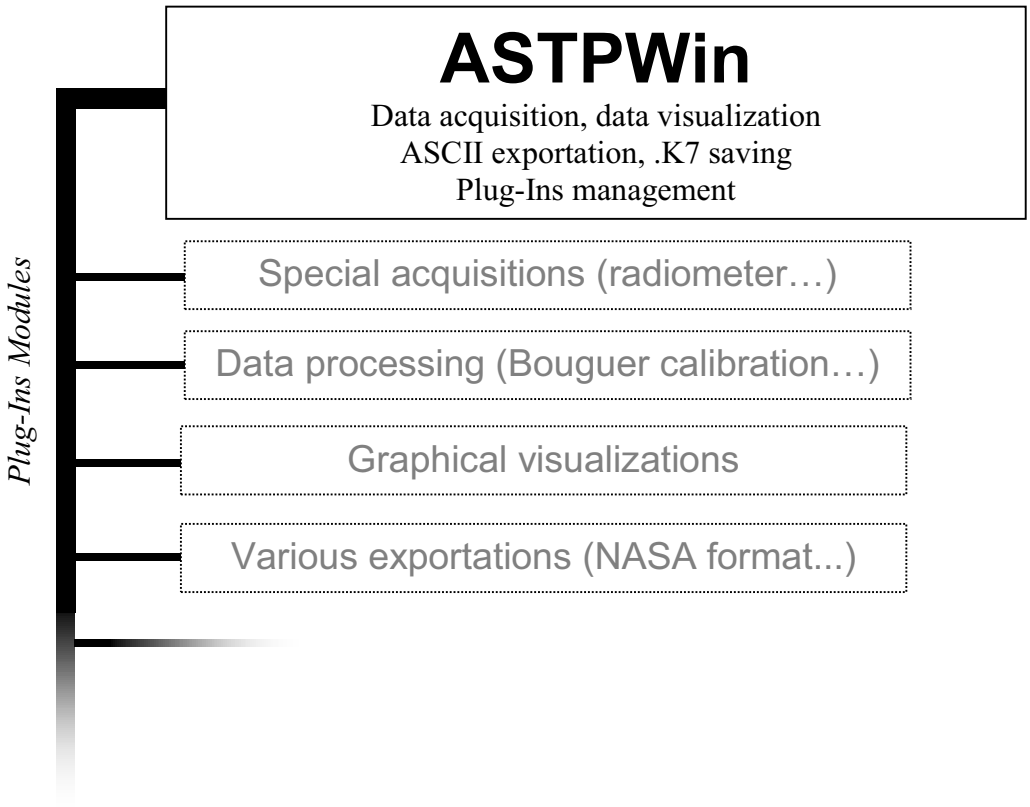
Display scenarios with errors

It's possible to hide or to show the scenarios with errors (transmission error, bad checksum, unknown scenario or impossible to decode…) in the scenario list. By default, these scenario types are displayed.
To activate that option, choose the menu « `Tools->General setup` », tab « `misc.` » tab and check « `Display scenarios with errors` ».

Data processing and Plug-Ins

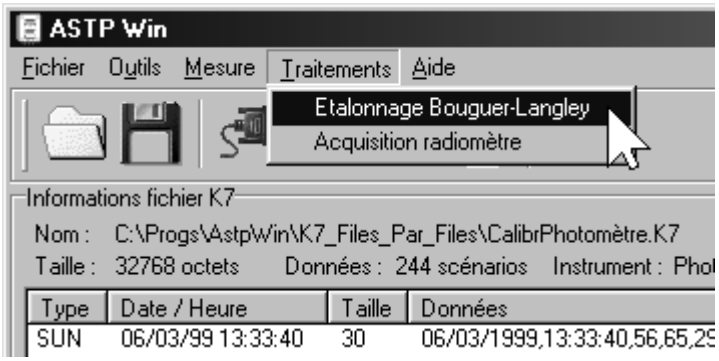
ASTPWin Software organization

ASTPWin is an open software which manage particular treatment adding :



How the Plug-Ins work

Physically, a plug-in is a .DLL file with optionally some others data files. When it's placed in the plug-in directory, it's automatically added in the ASTPWin interface (typically in the « `Processing` » menu) when the application starts :



Plug-Ins directory

You must indicate in what directory the plug-ins are stored.
To modify that directory, select the menu « `Tools->General setup` », « `misc.` » tab and give the full path of that directory « `Plug-ins directory` ».
If that directory contains valid .DLL files for ASTPWin, the new processing will be added ASTPWin at its next start (you must restart ASTPWin for chances to take effect).

K7 files management

Generalities

What's a .K7 file ?

A .K7 file is originally an image of the inquired instrument memory. It's size is 32kb, exactly the size of the classical CIMEL Electronique instrument memory.
The new extensions allows to overtake that size and the .K7 files produced by ASTPWin can do more than 32kb.

Importance of K7 files in relation to ASCII files

A K7 file can produce ASCII files, but the inverse isn't true. It's very important to keep the K7 file rather than the ASCII files.

The K7 file contains :
- Instrument parameters (at the acquisition time)
- The scenarios that are correctly decoded
- The bad or partially transmitted scenarios (except for merged files)

If a scenario isn't well decoded (due to a software problem), it's possible to correct the bug from the K7 file. If the use remove the K7 file, it's impossible to go back.
Besides ASTPWin plug-ins are exclusively using K7 file format.

ASTP for DOS compatibility

The compatibility between ASTPWin and ASTP for DOS is total and in both directions :
- ASTP for DOS can use ASTPWin files.
- ASTPWin can use ASTP for DOS files.

There's a limitation with files larger than 32kb that aren't supported by ASTP for DOS (it occurs for merged K7 files for example).

Opening and saving files

The K7 file opening can be done in the main menu « `File->Open…` » or by clicking on the shortcut icon :

Open a K7 file

To write the currently edited file, select the menu « `File->Save` » or click on the shortcut icon :

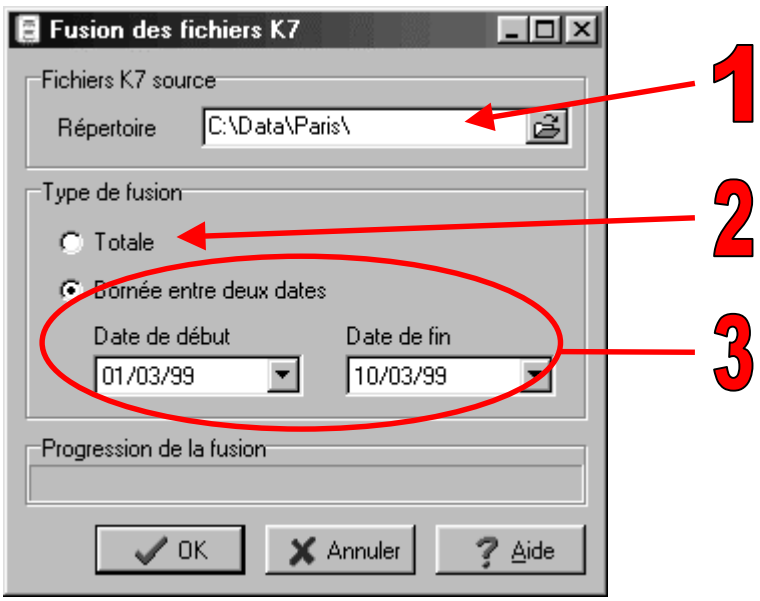
Save the K7 file

It's possible to change the currently edited file name by selecting the menu « `File->Save as...` »

Several K7 file merging

You can merge several file together. That action is very useful to pack several days together to process it all of a sudden. It's possible to create a K7 file that contains the scenarios of several K7 files.
Doubloons and scenarios with transmission errors are eliminated.
The file size can do more than the traditional 32kb that's why it's size is adjusted at it minimum.

To merge the files, select in the menu « `File->Merge K7 files` »:



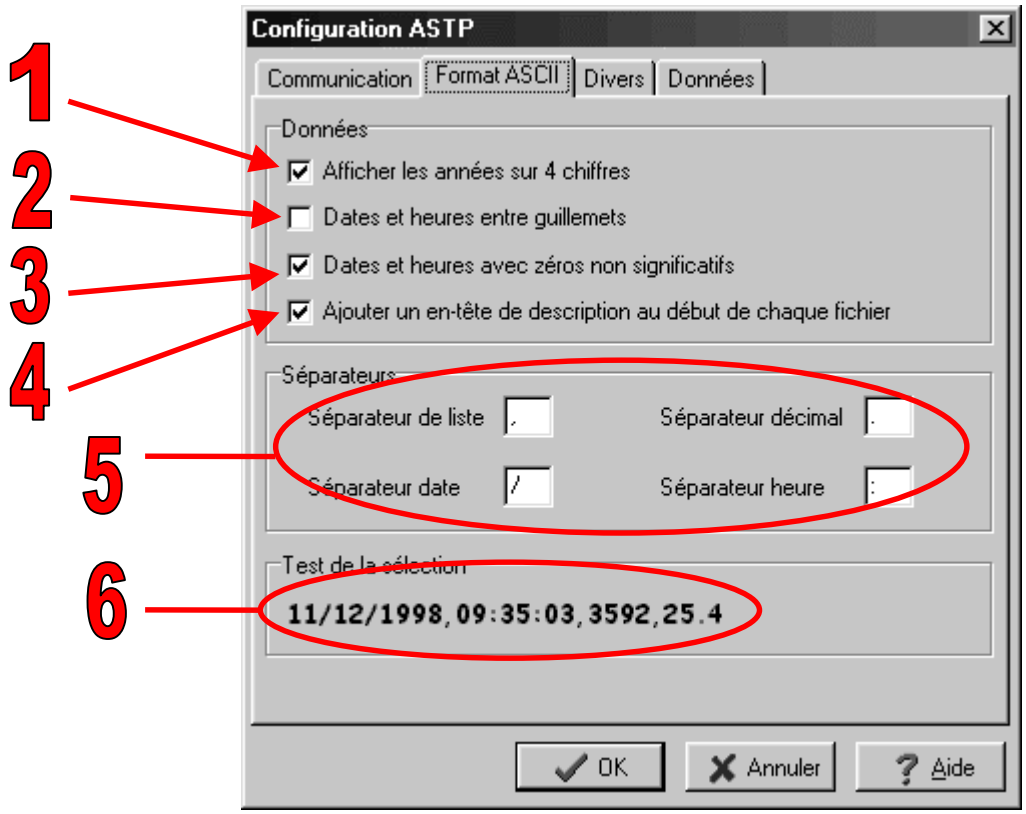
The K7 files source directory **(1)** specify where the K7 files are stored. All these files will be used for the merging and will produced a huge K7 file.
It's possible to add all the scenarios (Complete merging) **(2)** or to eliminate the scenarios which aren't included between the two dates (Between two dates merging) **(3)**.
The fusion progress shows the merging progression, this process can be long and depends of the computer power and the amount of files to merge.

ASCII Exportation

To use the data in other applications and programs, it's simpler to convert the files in text files which are readable by all the programs.

ASCII exportation SETUP

To configure the ASCII file format, go to the menu « `Tools->General Setup` » and select the tab « `ASCII Format` »



The dates can be displayed with four or two digits (For example 2001 or 01), tick the slot **(1)** to display the dates with all digits, on four numbers.

You are allowed to add quotation marks (") between the dates and the times. That option **(2)** can be useful with some software for automatic dates recognition.

The option " Dates and times with not significant zeros " **(3)** allows to display the dates with a fixed size format. To take an example, the 1st January 1998 is displayed 01/01/98 instead of 1/1/98.

It's possible to add a description header describing each column at the beginning of the ASCII files. Select the box **(4)** to add it, here is an example of a file with this king of header :

```
Date,Time,Sun0,Sun1,Sun2,Sun3,Sun4,Sun5,Sun6,Sun7,Temp
06/03/1999,13:33:40,56,65,29,1,0,70,2,3,28.7
```

```
06/03/1999,13:33:29,57,66,30,1,0,71,2,3,28.7
…
```

Each separator can be modified **(5)** to create files compliant to your recipient software.

The selection test line **(6)** shows quickly the format that will be used in the ASCII files.

Current file exportation

To export the currently edited .K7 file, select in the main menu « `Measurement->Save ASCII files` » or click on the shortcut icon :

Save the ASCII files

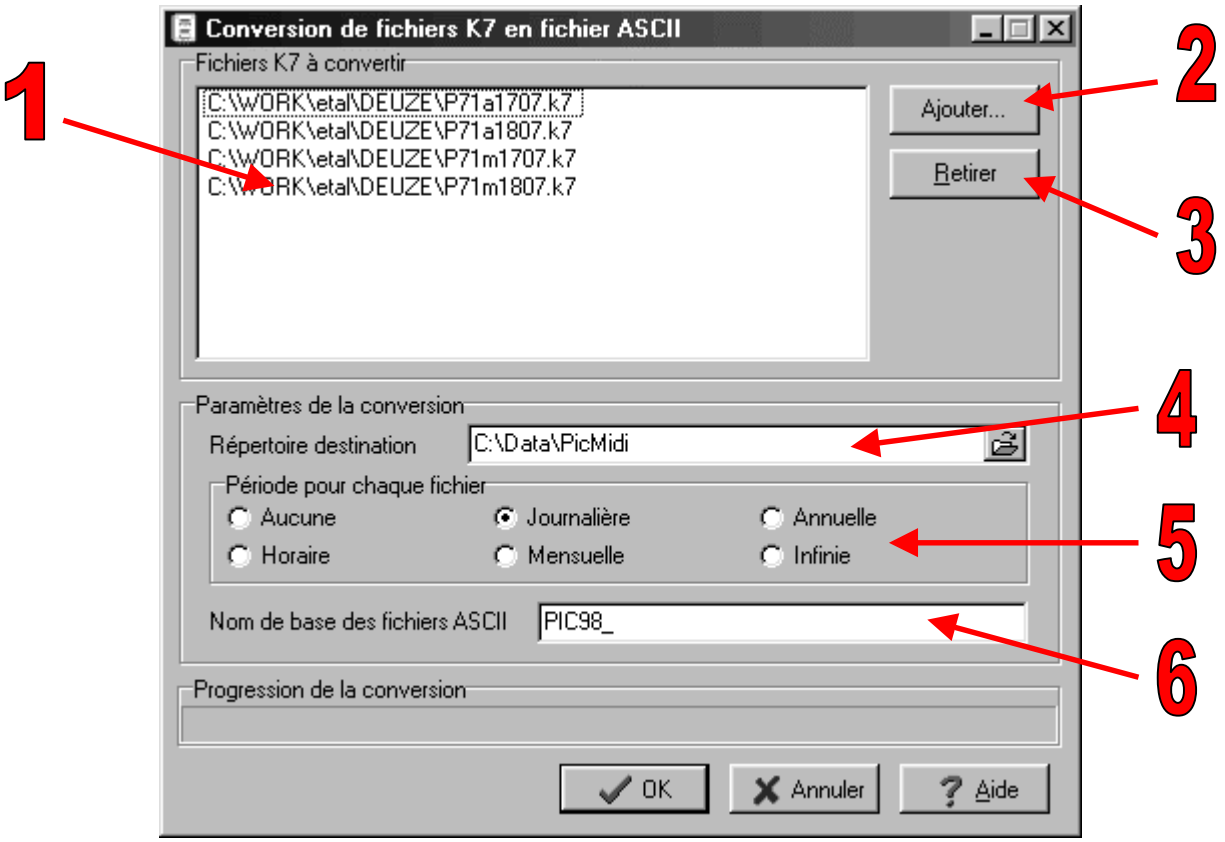
The ASCII files are created in the same directory of the K7 file but have a different extension. Each extension corresponds to a different measurement :

PP1	Principal Plane
ALM	Almucantar
RDR	Direct radiance status
STA	Instrument status
PPP	Polarized principal plane
SUN	Direct sun measurement
NSU	Direct sun measurement triplet
SKY	Sky measurement
SKX	Sky measurement (Max)
CAX	Calibration sky measurement (Max)
NSK	Sky measurement triplet
SSK	Mixed sun and sky triplet measurement
BLK	Black measurement
RAD	Filter / mirror radiometer measurement
R2M	Filter / mirror radiometer measurement
R4M	Radiometer measurement
R6M	Radiometer measurement (6 filters)
RBK	Filter / mirror / black radiometer measurement
AUR	Halo (aureole) measurement
CON	Cone measurement
GND	Ground measurement
CLL	Calibration radiance measurement
LUM	Radiance measurement
CRS	Sun Cross
CRK	Sky Cross

(this chart is only given for information and may not be complete)

Several K7 files conversion in ASCII

It possible to convert several K7 files (raw or merged) in ASCII text files.
To choose the files to convert, select the menu « `File->Convert in ASCII…` ».



The files list to convert **(1)** can be modified by adding files **(2)** or by removing selected files items **(3)**.

Indicate the directory where will be stored the ASCII files **(4)**.
The ASCII files are sorted in chronological order and the doubloons are eliminated.

The text files data can be organized in different ways **(5)**:

- No period
  Created files have the same name of the K7 file, only the file extension change.
- Hourly period
  Data are gathered hour by hour. Files are named hhDDMMYYYY.EXT.
- Daily period
  Data are gathered day by day. Files are named DDMMYYYY.EXT.
- Monthly period
  Data are gathered month by month. Files are named MMYYYY.EXT.
- Yearly period
  Data are gathered year by year. Files are named YYYY.EXT.
- Infinite period

Data are gathered in the same file. The file name is the base name with the specific ASCII file extension.

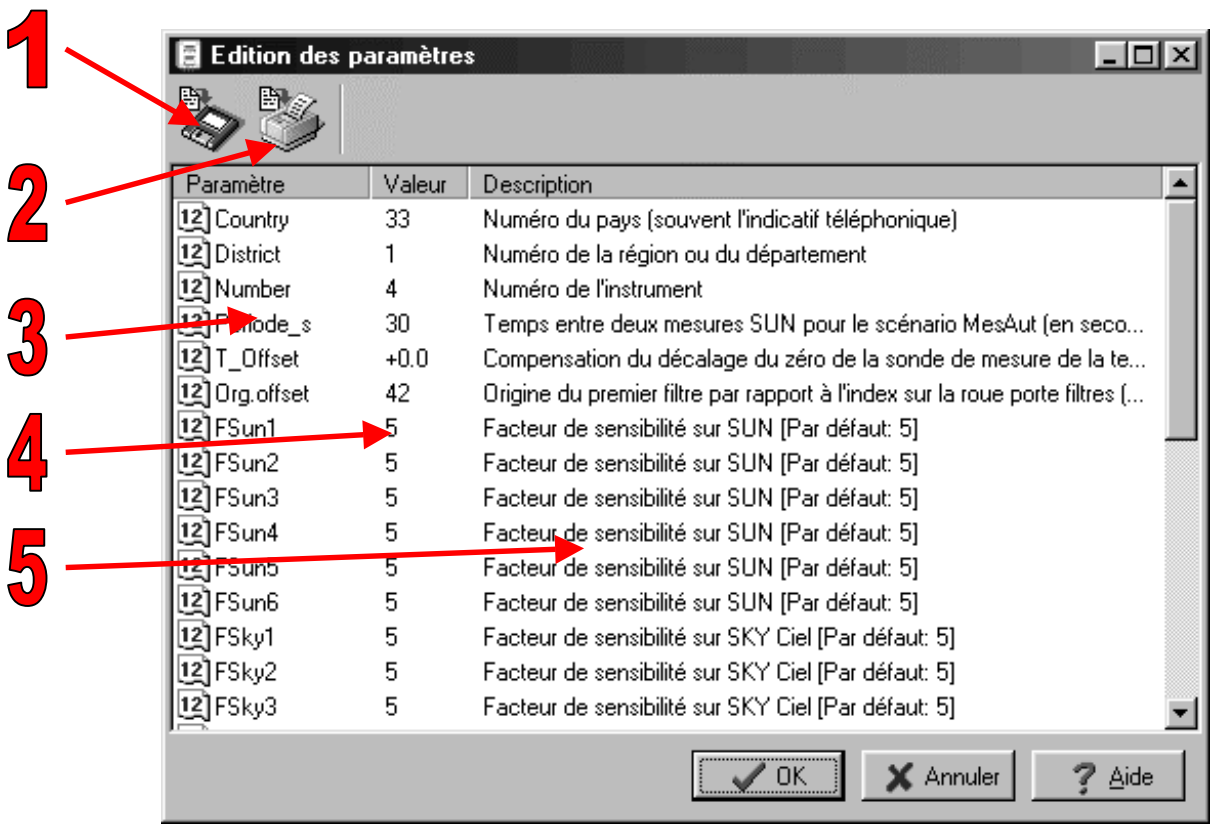
Attention: Bigger is the period, longer is the computation time when adding data.

The base name **(6)** is an optional prefix that ASTP adds before the text file name. E.g. if the base name is "PARIS_" and you choose a Monthly period, for the month of June 99, the filename will be PARIS_0698.EXT (EXT is the extension of the ASCII file)

Tools

Parameters edition

At the beginning of each transmission are transmitted the instruments EEPROM parameters (Identification, position, gains…). You can visualize and modify (carefully!) these parameters by selecting the menu « `Tools->Parameters edition` » :



It's possible to save the parameters in a text file **(1)** or to print them **(2)**.
Each parameter can be edited by double clicking on it. Warning, the old parameters will be lost if the modified K7 file is saved.
The name of the parameter is in the first column **(3)**, then come the value of this parameter **(4)** and the last column describe the parameter **(5)**.

The instrument parameters definition is stored in a .PAR file. If ASTPWin didn't find the file, an error message will be displayed « unable to load the parameter description file ». If the acquisition seems to be a good one, contact CIMEL Electronique to obtain a ASTPWin update (go to the CIMEL Web : www.cimel.fr).